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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,611	01/16/2004	Johann Karner	H60-107 DIV	8162

7590 06/21/2006

NOTARO & MICHALOS P.C.  
Suite 110  
100 Dutch Hill Road  
Orangeburg, NY 10962-2100

EXAMINER
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LUND, JEFFRIE ROBERT

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 06/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/759,611	KARNER ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jeffrie R. Lund	1763	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)          |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto, US Patent 6,017,396 in view of Karner et al, US Patent 5,753,045.

Okamoto teaches a vacuum processing apparatus that includes: two plasma discharge configurations 11, 12 that form two plasma beams 16 parallel to each other and in a low-voltage high-current plasma beam discharge gap between a cathode 11 and anode 12; a deposition configuration 14 holding two substrates 15, (substrate 15 is a continuous planar powder capture surface) which extend a selected distance from the beam axis along a substantial section of the discharge beam longitudinal direction and

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disposed between the discharge axes; a power supply 7 to independently drive each gap; a gas suction configuration (not shown); and a gas supply section 17, 18 for supplying a silicon containing gas. (Figure 4 and 6)

Okamoto differs from the present invention in that Okamoto does not teach gas flow is generally parallel to the discharge axis or that the cathode is a hot cathode.

Karner et al teaches the a plasma processing apparatus that has a gas flow parallel to the discharge beam 1 axis A and the discharge axis is disposed between multiple deposition configurations mounted on boat 24 and facing each other. (Entire document, specifically, figures 1, 3, and 3a) Karner et al also teaches that the gas flow parallel with the discharge beam axis produces more uniform coatings on larger deposition configurations by placing the deposition configurations parallel to the beam axis at a specific spacing for a desired plasma density such that the parallel gas flow produces a constant product (column 1 line 62 through column 2 line 27).

The motivation for replacing the gas supply configuration of Okamoto with the gas supply configuration of Karner et al is to provide a more effective means of supplying the reactant gas, which increases the dwell time of the gas in the plasma, and more uniformly coat the deposit configurations as taught by Karner et al.

The motivation for replacing the cold cathode of Okamoto et al with a hot cathode of Karner et al is to provide an alternate and equivalent plasma discharge configuration.

Alternately, the motivation for replacing the plasma discharge configuration of Okamoto with the plasma discharge configuration of Karner et al is to provide an alternate and equivalent plasma discharge configuration.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the gas supply configuration of Okamoto with the gas supply configuration of Karner et al, and the cold cathode of Okamoto with the hot cathode of Karner; or replace the plasma discharge configuration of Okamoto with the plasma discharge configuration of Karner et al.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto and Karner et al as applied to claims 1-8 above, and further in view of David, US Patent 6,015,597.

Okamoto and Karner et al were discussed above and teach a deposition configuration that has a continuous planar surface (i.e. flat substrate) which functions as a powder capture surface.

Okamoto and Karner et al differ from the present invention in that they do not specifically teach that the deposition configuration is configured as a powder capture surface.

David teaches a deposition configuration configured as a powder capture surface  
7. (Figure 1)

The motivation for replacing the deposition configuration of Okamoto and Karner et al with the deposition configuration of David is to enable the apparatus of Okamoto and Karner et al to produce powder products as taught by David.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the deposition configuration of Okamoto and Karner et al with the deposition configuration of David.

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5. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegaya, EP 0 493 609 A1, in view of Karner et al, US Patent 5,753,045, and Matsumoto et al, US Patent 5,340,621.

Ikegaya teaches a vacuum processing apparatus that includes: a hot plasma discharge configuration 10 located between two planar deposition configurations 7 (substrates 7 are a continuous planar powder capture surface) which extend a selected distance from plasma discharge configuration; a gas suction configuration 3; and a gas supply section 4 for supplying a gas containing carbon, nitrogen, or hydrogen gas. (Figure 1)

Ikegaya differs from the present invention in that Ikegaya does not teach that the plasma discharge configuration comprises two or more plasma beams with a substantially parallel discharge axes in a low-voltage high-current plasma beam discharge gap between a cathode and anode; a gas supply configuration with a gas flow generally parallel to the plasma discharge axis; or that the cathode is a cold cathode.

Karner et al teaches the a plasma processing apparatus that has a gas flow parallel to the discharge beam 1 axis A in a low-voltage high-current plasma beam discharge gap between a cathode 12 and anode 20 and connected to a power source 22. The discharge axis is disposed between multiple deposition configurations mounted on boat 24 and facing each other. (Entire document, specifically, figures 1, 3, and 3a) Karner et al also teaches that the gas flow parallel with the discharge beam axis produces more uniform coatings on larger deposition configurations by placing the

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deposition configurations parallel to the beam axis at a specific spacing for a desired plasma density such that the parallel gas flow produces a constant product (column 1 line 62 through column 2 line 27).

Matsumoto et al teaches a plasma discharge configuration 10 located between two planar and in a low-voltage high-current plasma beam discharge gap between a cathode 2 (hot or cold) and anode 6 that form two plasma beams 7 parallel to each other, a power supply 16 to independently drive each gap, and a gas supply section 26, 27 for supplying a silicon containing gas. (Entire document)

The motivation for replacing the plasma discharge configuration of Ikegaya with the plasma discharge configuration of Karner et al is to provide an alternate and equivalent means of forming a plasma in the apparatus of Ikegaya.

The motivation for using multiple plasma discharge configurations to form multiple plasma beams in the apparatus of Ikegaya is to more uniformly distribute the plasma over the substrate as taught by Matsumoto et al. Furthermore, it has been held that the duplication of parts is obvious (see *In re Harza* 124 USPQ 378).

The motivation for making the cathode of Ikegaya a cold cathode is to provide an alternate and equivalent type of cathode, and to prevent contamination introduced by the sputtering effect of a hot cathode.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the plasma discharge configuration of Ikegaya with the plasma discharge configuration of Karner et al and use multiple plasma discharge configurations as taught by Matsumoto, and use a cold cathode as taught by

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Matsumoto.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegaya, Karner et al, and Matsumoto et al as applied to claims 1-8 above, and further in view of David, US Patent 6,015,597.

Ikegaya, Karner et al, and Matsumoto et al were discussed above and teach a deposition configuration that has a continuous planar surface (i.e. flat substrate) which functions as a powder capture surface.

Ikegaya, Karner et al, and Matsumoto et al differ from the present invention in that they do not specifically teach that the deposition configuration is configured as a powder capture surface.

David teaches a deposition configuration configured as a powder capture surface

7. (Figure 1)

The motivation for replacing the deposition configuration of Ikegaya, Karner et al, and Matsumoto et al with the deposition configuration of David is to enable the apparatus of Ikegaya, Karner et al, and Matsumoto et al to produce powder products as taught by David.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the deposition configuration of Ikegaya, Karner et al, and Matsumoto et al with the deposition configuration of David.

### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

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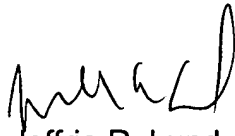
***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art teaches the technological background of the invention.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (6:30 am-6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jeffrie R. Lund  
Primary Examiner  
Art Unit 1763

JRL  
6/18/06